Reconsideration of the application in view of the following amendments and remarks is respectfully requested.

REMARKS

Claims 1-123 remain pending in the present application. In the Office Action, the Examiner rejected claims 1-23, 45-57, and 59-100 under 35 U.S.C. §103(a) as being unpatentable over Dai (U.S. Patent No. 5,877,076) in view of Liou et al. (U.S. Patent No. 5,847,460) and in further view of Wolf, "Silicon Processing for the VLSI Era," vol. 2, pp. 20-27. Applicant respectfully traverses this rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. That is, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. Third, there must be a reasonable expectation of success. The teaching or suggestion

to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. A recent Federal Circuit case emphasizes that, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

With regard to independent claims 1, 45, and 59, Applicants describe and claim performing a first anisotropic etch into a region of a cap layer underlying an opening in a photoresist layer to form an etched region in the cap layer, leaving a portion of the cap layer in the etched region. Applicant discloses on page 10, lines 14-22 of the specification that the portion of the cap layer in the etched region that remains after the anisotropic etching process protects the process layer residing below from any contamination or damage resulting from the removal of the photoresist layer that resides above the cap layer.

In the rejection, the Examiner alleges that Dai discloses forming a dielectric layer (120), forming a SiN layer (130) over the dielectric layer (120), and forming a photoresist layer (150) above the SiN layer (130). The Examiner further contends that Dai teaches forming an opening (151) in the photoresist layer (150), etching into the SiN layer (130), removing the photoresist layer (150), and performing a second etch pattern in the dielectric layer (120). The Examiner states that Dai does not disclose that the etching steps are anisotropic etching steps. The Examiner then relies on Liou for teaching the use of anisotropic etch procedures in a semiconductor manufacturing process, and alleges that it would have been obvious to modify the

process of Dai by specifically utilizing anisotropic etching because of the advantages anisotropic etching provides over other etching methods.

Applicant respectfully submits, however, that even if it would be considered obvious to combine the teaching of Liou to perform anisotropic etching in the process of Dai as alleged by the Examiner, which Applicant maintains is not necessarily the case, that the limitations of independent claims 1, 45, and 59 of the present invention would still not be taught or suggested by the alleged combination as proposed by the Examiner. In particular, Applicant respectfully submits that Dai teaches removing the entire portion of the SiN layer 130 (which the Examiner appears to be reading on Applicant's claimed "cap layer") in the etched region down to the dielectric layer 120 that resides below the SiN layer 130. See Dai, Figure 3g. Consequently, the etching procedure taught by Dai completely exposes the dielectric layer 120 within the opening defined in the layer of photoresist 150. Thus, Dai does not achieve the advantages of the present invention, *i.e.* protecting the process layer residing below from any contamination or damage resulting from the removal of the photoresist layer that resides above the cap layer.

The Examiner alleges that Wolf teaches that portions of a silicon nitride layer remain after a first etching process takes place. However, Applicant respectfully submits that the remaining portions of the silicon nitride layer described in Wolf are not in the etched region. In fact, Wolf teaches that the silicon nitride layer and an underlying pad layer are completely removed from the etched region to expose a portion of a silicon wafer. See Wolf, pg. 22, §2.2.2.3, and Figure 2-6. Accordingly, Applicant respectfully submits that the alleged combination of Dai, Liou, and Wolf fails to teach or suggest leaving a portion of the cap or second process layer in the etched region as a result of the first etch. Thus, Applicant respectfully submits that independent claims 1, 45, 59, and all claims depending therefrom are not obvious

over Dai and Liou in further view of Wolf and request that the Examiner's rejections of claims 1-23, 45-57, and 59-100 under 35 U.S.C. §103(a) be withdrawn.

In the Office Action, the Examiner rejected claims 24-44 under 35 U.S.C. §103(a) as being unpatentable over Dai in view of Liou, in further view of Wolf, and further in view of Chiang et al. (U.S. Patent No. 5,817,572). Applicant respectfully traverses this rejection.

The Examiner relies on Chiang for teaching a semiconductor manufacturing process that includes the step of forming an opening, filling the opening with a barrier layer, which includes titanium nitride, and then with a conductive layer. However, in independent claim 24, Applicant describes and claims performing a first anisotropic etch into a region of the cap layer underlying the opening in the photoresist layer to form an etched region in the cap layer, leaving a portion of the cap layer in the etched region. As discussed above, the Examiner's proposed combination of Dai, Liou, and Wolf fails to teach or suggest this limitation. Furthermore, Applicant respectfully submits that Chiang fails to remedy this fundamental deficiency. Accordingly, Applicant respectfully submits that claims 24-44 are not obvious over Dai in view of Liou, in further view of Wolf, and further in view of Chiang, and requests that the Examiner's rejection be withdrawn.

In the Office Action, the Examiner rejected claims 101-123 under 35 U.S.C. §103(a) as being unpatentable over Dai in view of Liou, in further view of Wolf, and further in view of Nguyen (U.S. Patent No. 5,821,169). Applicant respectfully traverses this rejection.

The Examiner relies on Nguyen for teaching to deposit a hard mask over a dielectric layer, and wherein the hard mask has at least one opening to reveal an integrated circuit area. However, in independent claim 101, Applicant describes and claims performing a first anisotropic etch into a region of the cap layer underlying the opening in the photoresist layer to form an etched region in the cap layer, leaving a portion of the cap layer in the etched region. As

discussed above, the Examiner's proposed combination of Dai, Liou, and Wolf fails to teach or suggest this limitation. Furthermore, Applicant respectfully submits that Nguyen fails to remedy this fundamental deficiency. Accordingly, Applicant respectfully submits that claims 101-123 are not obvious over Dai in view of Liou, in further view of Wolf, and further in view of Nguyen, and requests that the Examiner's rejection be withdrawn.

For at least the aforementioned reasons, Applicant respectfully submits that the rejections set forth in the present application are improper and should be withdrawn because the cited references fail to teach or suggest all of the limitations of the claims as discussed in detail above. Accordingly, in view of the remarks presented herein, Applicant believes that all claims pending in the present application are in condition for allowance. The Examiner is invited to contact the undersigned at (713) 934-4052 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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